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**U.S. PATENT APPLICATION**  
**FOR**  
**SPORTS CAP HAVING DETACHABLE BELT**

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# SPORTS CAP HAVING DETACHABLE BELT

## RELATED APPLICATIONS

This application is a continuation-in-part of U.S. Patent Application Serial No.  
5 10/177,881 to Lee, filed June 24, 2002, and from which priority is claimed.

## FIELD OF THE INVENTION

The present invention relates to headwear and more particularly, this invention  
10 relates to a sports cap having a detachable belt attached to a crown of the cap via  
opposing coupling devices.

## BACKGROUND OF THE INVENTION

15 In the past, attempts have been made to provide a cap which can fit wearers  
having heads of varying sizes. Such well known caps have used a plastic adjustable-band  
strap, placed at the bottom back of the cap for adjustment by the wearer. An open  
aperture area is disposed above the portion of the cap where the plastic adjustable-band  
strap is placed. This allows the wearer to make any necessary adjustments without  
20 significant bunching of the cap. Examples of such caps 100, 300, 400, 500 are shown in  
FIGS. 1-5. These caps are commonly referred to as multi-sized caps and are worn  
widespread among cap wearers.

More often than not, multi-sized caps include a variable plastic adjustable-band fastening arrangement where the strap has holes that receive a snap receiver. The holes in these straps are specifically placed and measured in increments of no wider than  $\frac{1}{8}$  inches to accommodate the head size of the wearer. Typically, a variable plastic adjustable-band fastener does not fit exactly to someone whose head size is between two size numbers. An improper size to the wearer lacks comfort, and as a result, the shape of the cap changes over time. Past multi-sized caps with the plastic adjustable-band fasteners have been unable to be completely detachable and unable to be embroidered at the request of the wearer. Retailers have often had to discourage customers from having designs embroidered at the rear belt band.

Better fasteners have been available in the prior art. Hooks and loops fasteners have been introduced to provide a lightweight form of fastening mechanism for caps adapted to fit individuals whose head sizes are between two standard sizes. Such fasteners also ease some of the pain and pressure on the wearer's head that would otherwise result from an improper fit. A disadvantage with the hooks and loops fastener is that not only is it bothersome, but the fastened element is more often than not undone inadvertently, causing the cap to fall off of the individual's head. Also, once the cap falls off of the individual's head, the fall or attempts to catch the cap can cause the cap body to wrinkle and distort. Like the apertured plastic adjustable-band, having a logo embroidered on the hooks and loops fastener remains a question still to be solved.

Other fasteners used by everyday common multi-sized caps are that shown in FIG. 4 and FIG. 5 respectively. The buckle and the single belt buckle fastener shown in FIGS. 4 and 5 are both improvements made on the original plastic adjustable-band

fastener (FIG. 2) to provide maximum harness onto the individual wearer. Unlike the original plastic adjustable-band fastener, the buckle and single belt fasteners are lightweight and do not inadvertently undo themselves because the fasteners are tightly fastened to the belt band regardless of excessive sweat caused from physical activities and/or high ambient temperatures. Although discomfort and some pressure can be sensed by the wearer, this is only minimal compared to the original plastic adjustable-band fastener.

One example of a known multi-sized cap that has made great strides in foreseeing the problem of eliminating the pressure on the wearer's head is disclosed in U.S. Pat. No. 5,715,540 to Cho. According to Cho's patent, a free size cap has a woven material that uniaxially stretches in one direction. Cho's patent solves the problem of detracting from the aesthetic value of the cap. Typically, caps that have been made to fit a head of a single fixed size have a problem fitting individuals with head sizes between two standard sizes. An improper adjustment in size lacks comfort and with time, alters the overall shape of the cap. In such cases, stores stocking such single size caps are then required to carry a substantial stock of caps with different sizes. Although Cho's patent argues the problem of providing an exact fit for individuals whose head sizes lie between two size numbers, the patent makes no references to the detachability of the rear band for custom embroidery. Moreover, Cho's patent gets rid of the fastening mechanism all together for a single uniaxially stretchable material that is sewn along the circumference of the cap.

U.S. Pat. No. 5,119,514 to Woehl describes a cap having a rear gore in the crown of a stretchable material to provide size adjustment or spanned by a tab which may be an elastic band, a hooks and loops fastener or a plastic adjustable-band fastener to variable

lengths. In this patent, the tab to which may be attached a hooks and loops fastener or a plastic adjustable-band fastener provides the feature to fit a variety of head sizes.

However, Woehl makes no reference to alleviating the pressure at the back of the individual's head. Additionally, the cap size adjustment used in Woehls' patent may  
5 require an increased manufacturing cost compared to other common caps.

U.S. Pat. No. 6,131,202 to Yan also attempts to overcome the above-mentioned problems by making the cap multi-axially stretchable. The patent describes a cap having a plurality of gores composed of multi-axially stretchable fabric having a stretchable synthetic fiber woven in the warp and weft of the fabric. Although Yan improves the cap  
10 described in Cho, Yan does not discuss the need to prevent the cap from falling from the wearer's head. During physical exercise, the individual wearing the cap must be able to concentrate on the activity he or she is pursuing without worrying about the cap falling from the individual's head. Yan argues only to the point of alleviating the pressure on the individual's head.

15 Past fastening mechanism such as the hook and loop fastener (VELCRO® fastener), plastic adjustable-band fastener and the aforementioned Cho's, Woehl's and Yan's patents have failed to solve the problem of having custom embroidery done along the rear belt band of the fastener. The fastening mechanism used by today's common multi-sized caps have only solved the problem of providing a better and exact fit for  
20 individuals whose head size is between two sizes and alleviating any pressure along the circumference of the wearer's head.

## SUMMARY OF THE INVENTION

The present invention overcomes the drawbacks and limitations described above  
5 by providing headwear such as a sports cap having a crown and a fastening mechanism  
having two coupling devices coupled to the crown and a belt detachably coupled to the  
coupling devices. The belt can be resiliently elastic, or may not be significantly elastic.  
The belt can also have indicia thereon. Because the belt is detachable, it can be replaced  
by a second belt. Preferably, pockets are formed in the crown for receiving ends of the  
10 belt(s).

The coupling devices can be buckles, buckles implementing compression fittings  
for holding the belt in place, snap type fasteners, hooks or loops type fasteners, a buckle  
having a catch or prong that is insertable through complementary holes in the belt, and  
combinations thereof.

15 In a preferred embodiment, fixing bands extend between the coupling devices and  
the crown. The fixing bands can be resiliently elastic, and optionally, positionable  
between a retracted position and an extended position with respect to the crown. The  
fixing bands may extend from pockets formed in the crown.

The invention overcomes the aforementioned disadvantages of known multi-sized  
20 caps and of fixed-size caps. The present invention allows a user to achieve a precise fit,  
which is particularly useful for keeping the cap affixed to the wearer's head even during  
extreme physical exercise or application of an external force thereto. The belt attached to  
the coupling devices allows easy detachment for custom embroidering of designs and

logos that was once unable to be performed. Moreover, the present invention eliminates excess hair from being tangled with the fastener as the cap is worn by the individual.

Other aspects and advantages of the present invention will become apparent from the following detailed description, which, when taken in conjunction with the drawings,  
5 illustrate by way of example the principles of the invention.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

For a fuller understanding of the nature and advantages of the present invention, as  
5 well as the preferred mode of use, reference should be made to the following detailed  
description read in conjunction with the accompanying drawings.

FIG. 1 is a side view of a regular sports cap.

FIG. 2 is a rear view of a regular sports cap with a plastic adjustable fastener.

FIG. 3 is a rear view of a regular sports cap with a hooks and loops fastener.

10 FIG. 4 is a rear view of a regular sports cap with a buckle fastener.

FIG. 5 is a rear view of a regular sports cap with a single belt and buckle fastener.

FIG. 6 is a rear view of a cap with a double belt buckle and belt fastening  
mechanism according to one embodiment of the present invention.

FIG. 7 is a rear view of the cap of FIG. 6, the invention in question with the belt  
15 removed.

FIG. 8 is a front view of multiple belts.

FIG. 9 illustrates an alternate embodiment of a cap according to the present  
invention.



### **BEST MODE FOR CARRYING OUT THE INVENTION**

The following description is the best embodiment presently contemplated for  
5 carrying out the present invention. This description is made for the purpose of illustrating  
the general principles of the present invention and is not meant to limit the inventive  
concepts claimed herein.

FIGS. 6-8 illustrate headwear, and particularly a sports cap 600, having a  
generally hemispherecally-shaped crown 602 and a fastening mechanism 604 at the  
10 bottom back of the crown 602 in a cutout 605 thereof. A bill or visor portion (not shown,  
see FIG. 1) can be coupled to a front and/or side and/or back of the crown 602.

The crown 602 can be formed, for example, of multiple gores or shaped pieces  
material (e.g., cotton, nylon, etc.) coupled together such that the crown 602 covers nearly  
the entire upper portion of the head of the wearer. The crown 602 can also be formed of  
15 a unitary piece of material.

The fastening mechanism 604 in this embodiment includes a belt 606 detachably  
coupled to the crown 602 via opposite coupling devices, here buckles 608, 610. The  
fastening mechanism 604 provides a precise and comfortable fit for various head sizes  
and a secure harness while the individual pursues physical activities.

20 In one embodiment, the belt 606 is resiliently elastic, i.e., stretchable, and can be  
formed from any suitable resiliently elastic material including rubber in a fabric shell.  
Preferably, the extent of elasticity of the belt 606 under a one pound load is between  
about 5% and about 25% of the total unstretched length, meaning that the length of the

belt increases by about 5-25% under the one pound load. The unique uniaxial stretch mechanism provided by the resiliently elastic belt 606 having these characteristics provides a unique fastening stretch mechanism that aids the cap 600 in fitting multiple head sizes as well as helps the cap 600 to remain on the head of the individual wearer, even during extreme physical activity or upon application of external forces (wind, contact with another object, etc.). And because the belt 606 is coupled to opposing buckles 608, 610, the tendency of the elasticity of the belt 606 to create bunching of the crown 602 only at one side of the cutout 605 is virtually eliminated.

In another embodiment, the belt 606 is not significantly elastic (i.e., less than 5% increase in length under a one pound load), and can be formed of a material such as cotton, nylon, leather, etc. This type of belt 606 is particularly useful where indicia is added to the belt, in that the indicia will not deform upon the cap being worn.

In any of the embodiments described herein, the belt 606 can be provided with custom colors, designs and/or indicia. Illustrative indicia include sports team names, product names and trademarks, etc. The colors, designs and/or indicia can, for example, be integrally formed in/on the belt 606; affixed to the belt 606 via adhesive, paint or pigment, thermal bonding, as a decal, etc.; sewn or embroidered onto the belt; combinations of these; etc.

Each of the buckles 608, 610 in the embodiment shown in FIGS. 6 and 7 is generally rectangular and has a pair of belt receiving apertures formed therein. Suitable materials for creating the buckles include plastic, metal such as stainless steel, etc. The belt 606 is inserted through the belt receiving apertures of each buckle 608, 610, thereby forming a secure coupling that resists slippage. Moreover, this type of buckle 608, 610

substantially eliminates the tendency of hair to become tangled with the fastening mechanism 604 as the cap 600 is worn by the individual.

Alternative coupling devices that can be used in place of the buckles described above include, individually or in combination, buckles implementing compression fittings that hold the belt 606 in place, snap type fasteners that engage a corresponding member attached to the belt 606, hooks or loops type fasteners that engage the complementary hooks or loops portions of the belt 606, a buckle having a catch or prong that is insertable through complementary holes in the belt 606 (as in a waist belt), etc. Those skilled in the art will understand how to implement these and other types of coupling devices in the cap 600 of the present invention. For clarity, the remaining description shall refer to buckles coupling devices, it being understood that other types of coupling devices can be implemented as well.

The detachable belt 606 is removable from the crown 602 by detaching the belt 606 from the buckles 608, 610. Thus, the belt 606 is interchangeable, allowing the vendor or wearer to select an appropriately sized belt 606 for the size of the wearer's head. Further, because the belt 606 is interchangeable, belts 606 having custom colors, designs and/or indicia preferred by the individual wearer can be added to the cap 600 and readily interchanged.

The buckles 608, 610 are preferably coupled to the crown via fixing bands 612, 614 that are coupled to the crown such as by sewing, and extend from the cutout 605 along a lower periphery of the crown 602. This makes it easier to attach and detach the belt 606 from the buckles 608, 610. As an option, the fixing bands 612, 614 can be resiliently elastic to enhance the overall comfort of the cap 600 and coupling of the cap

600 to the head of the wearer. Resiliently elastic fixing bands 612, 614 are particularly useful where the belt 606 is not elastic. As another option, the fixing bands 612, 614 can be adjustable with respect to the crown 602. For instance, the fixing bands 612, 614 be positionable between a retracted position (where the fixing bands 612, 614 are positioned  
5 primarily behind the crown 602) and an extended position (where the fixing bands 612, 614 are fully extended from the crown 602).

For the comfort of the wearer, the fixing bands 612, 614 preferably extend from pockets 616, 618 in the periphery of the crown 602. The pockets 616, 618 can be formed by folding in the lower edge of the crown 602 and coupling the edge back to the crown  
10 602. An additional benefit is that the pockets 616, 618 can receive any excess portions (e.g., ends) of the belt 606, thereby preventing the ends of the belt 606 from curling when the cap 600 is placed on the wearer's head as well as adding to the overall comfort of the cap 600.

FIG. 9 illustrates an alternate embodiment of a sports cap 900 according to the  
15 present invention. As shown, the cap 900 has a crown 602 and a belt 606 with one end coupled to the crown. A free end 902 of the belt 606 is detachably coupleable to a coupling device 608 that is attached to the crown 602. The various components of the cap 900 are substantially as described above.

Note that the invention has been described in terms of a sports cap. However, one  
20 skilled in the art will understand that the various aspects and components of the present invention can be implemented in various types of headwear.

While various embodiments have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the

breadth and scope of a preferred embodiment should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.